

**REMARKS**

In the July 7, 2010 Official Action claims 57-78 and 80-110 were pending in the application, with claims 80 – 110 withdrawn and claims 57 – 78 rejected. Claim 57 has been amended above based primarily on the subject matter of previous claims 57, 65, 67, 69, 70 and 71. The expression for the value of each element of the averaged-difference vector  $\vec{d}$  is based on the description in the paragraph bridging pages 20 and 21, and in the paragraph bridging pages 41 and 42. Further, the feature of segmenting of the first and second real-space image data items is based on the description at page 40 lines 14 to 18. In view of the amendment to claim 57, claims 65 – 71 have been canceled above.

Claims 57 – 64 stand rejected under 35 U.S.C. §103(a) as allegedly “being unpatentable over Dong et al. (Rectification of distortion in MRI for stereotaxy (applicant submitted reference in IDS)) and in view of Haacke EM et al. (Magnetic Resonance Imaging (applicant submitted reference in IDS)).” In regards to this alleged ground for rejection, the Examiner appears to have carried over the rejection to claim 79. Claim 79 is no longer pending in the present application and will not be addressed in the following response.

Claims 65 – 71 stand rejected under 35 U.S.C. §103(a) as allegedly “being unpatentable over Dong et al. (Rectification of distortion in MRI for stereotaxy (applicant submitted reference in IDS)), in view of Haacke EM et al. (Magnetic Resonance Imaging (applicant submitted reference in IDS)) and further in view of Pelagotti (US 2003/0035583).”

Claims 72 – 78 stand rejected under 35 §103(a) as allegedly “being unpatentable over Dong et al. (Rectification of distortion in MRI for stereotaxy (applicant submitted reference in IDS)), in view of Haacke EM et al. (Magnetic Resonance Imaging (applicant submitted reference in IDS)) and further in view of Murakawa (US 2001/0046321).”

These rejections, constitute all of the grounds set forth in the July 7, 2010 Official Action for refusing the present application. For the reasons given below, these grounds of rejection are overcome in view of the claim amendments presented above.

**REJECTIONS UNDER 35 U.S.C. §103(a)**

**Claims 57 – 64 and 72 – 78 stand rejected under 35 U.S.C. §103(a)**

In response the rejection of claims 57 – 64 and 72 – 78 the Applicants have amended independent claim 57 from which all pending claims, claims 58 – 64 and 72 – 78, variously

depend. Although the Applicants do not agree with the validity of the alleged grounds for rejection of the claims 57 – 64 and 72 – 78, the amendment to claim 57 fully overcomes the rejections.

Claim 57 now recites the feature of a “a third image boundary having a third image boundary vector being one of the first image boundary vector  $\vec{f}$  and the second image boundary vector  $\vec{r}$  to which is added an averaged-difference vector...”. Further, claim 57 recites that “the value of each element of said averaged-difference vector  $\vec{d}'$  being determined as a weighted average according to the expression:

$$\vec{d}'_j = \frac{1}{n} \sum_{i=0}^n w_i \vec{d}_{j-n/2+i}$$

There is no disclosure in Pelagotti corresponding to or even hinting at these requirements.

For example paragraph [0032] of Pelagotti, referenced by the Examiner, discusses a motion vector, and not boundary vectors. Also paragraph [0032] does not discuss defining a third image boundary (the “third image” referred to in the penultimate line of paragraph [0032] of Pelagotti is not derived from the first and second images). Thus Pelagotti is largely irrelevant to the third image boundary requirements of claim 57.

In addition, claim 57 now recites “segmenting said first real-space image data items such that first real-space image data items outside said first image boundary are set to a value of zero, and first real-space image data items inside said first boundary are retained; and segmenting said second real-space image data items such that second real-space image data items outside said third image boundary are set to a value of zero, and second real-space image data items inside said third boundary are retained.” Again, there is no disclosure in Pelagotti corresponding to or hinting at these segmentation requirements.

The Examiner asks that “the criticality of these steps” be pointed out. The third image boundary requirements of claim 57 allow a smoother third boundary to be obtained. This in turn improves the segmentation from the rest of the image data of a feature of interest within the image frames of both the first and second images. Since corresponding image features within the first and second images typically shift to some degree due to the differing magnetic field gradients employed during image data acquisition, the corresponding boundaries of the feature(s) of interest within the two images will also shift. However, subsequent analysis of the first and second images is simplified by segmenting such that the

first real-space image data items outside the first image boundary are set to a value of zero, first real-space image data items inside the first boundary are retained, second real-space image data items outside the third image boundary are set to a value of zero, and second real-space image data items inside the third boundary are retained.

After segmentation, the third image boundary thus defines a boundary which better resembles the first image boundary than does the second image boundary, but is shifted by a similar amount as the second image boundary relative to the first image boundary. Noise or irrelevant data can be removed from both the first and second images, the presence of which can otherwise seriously hamper subsequent image processing of the features of interest within the images.

Thus in light of the amendments to claim 57, claims 57 – 64 and 72 – 78 are novel and nonobvious over Dong, Haake, Pelagotti, and Murakawa. Accordingly, inasmuch as the cited art provides no basis to arrive at the invention as instantly claimed, Applicants request that the rejection of claims 57 – 64 and 72 – 78 under 35 U.S.C. §103(a) be withdrawn.

**Claims 65 – 71 stand rejected under 35 U.S.C. §103(a)**

Applicants have canceled claims 65 – 71 above rendering the rejection of such claims moot.

**CONCLUSION**

It is respectfully requested that the amendments presented herewith be entered in this application. The amendments to the claims and accompanying remarks are believed to clearly place the pending claims in condition for allowance. Therefore, it is respectfully urged that the rejections set forth in the July 7, 2010, Official Action be withdrawn and that this application be passed to issue.

Early and favorable action on the present application is earnestly solicited.

Respectfully submitted,

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